

Report to the United States Agency for International Development

Concerning IIPI Assistance to The Southern African Research and Innovation Management Association (SARIMA)

SARIMA Establishment Meeting, February 14th – 15th, 2002

Institution Building through Collaborative Efforts

In September 2001, as part of the international assistance assigned to South Africa through the United States Agency for International Development (USAID), two staff members¹ of the International Intellectual Property Institute (IIPI) visited South Africa to assist South Africa's Department of Trade and Industry (DTI) in preparation for the World Trade Organization's (WTO) Doha Ministerial Meeting in November. While visiting South Africa, IIPI toured a number of national research institutions and universities to offer a global perspective regarding intellectual property and to obtain a better understanding of how intellectual property is viewed and used in South Africa. One of the institutions visited was the University of Cape Town (UCT), where IIPI staff met Dr. A.D. Tony Heher, head of UCT's Innovation Office. Their discussion provided IIPI with a better understanding of the obstacles facing South Africa's research system.

Dr. Heher identified a number of problems in South Africa's universities: little institutional experience in technology transfer, understaffed technology transfer offices, a lack of funding for international patenting, and a research culture not supportive of technology transfer and commercialization.² Dr. Heher also took the opportunity to share with the IIPI staff his plans of establishing a new organization designed to support the work of technology transfer personnel at universities and national science councils. At the time, Dr. Heher had done substantial preparatory work in developing support, but the organization had not formally been created. Recognizing the important role such an organization could play in South Africa, IIPI began collaborating to support Dr. Heher's efforts.

As part of IIPI's collaboration with Dr. Heher and his project, IIPI agreed to organize and support workshops to compliment the new organization's launch. Planning for the workshops continued through February 2002. The workshops were held in Hout Bay, just outside of Cape Town on February 14-15, 2002. During the organization's establishment meeting, participants elected officers and voted on a name for the organization – the Southern Africa Research and Innovation Management Association (SARIMA).

¹ The two staff members were IIPI President, Bruce Lehman, and IIPI Projects Coordinator Lee Gillespie-White, a South African attorney.

² See, Report presented by the International Intellectual Property Institute (IIPI) to the United States Agency for International Development (USAID) on the USAID sponsored visit to South Africa ["IIPI-USAID Report 1"], September 16 – 22, 2001.

Summary of the Workshop

The workshop program consisted of an introductory participatory session, three presentations and two workgroup sessions over two days. Each presentation was led by one of IIPi's delegation.

On the first day, the workshop began with an introductory participatory session where attendees were asked to share their impressions of what problems are most troubling Southern Africa's research and innovation system and how they envisioned SARIMA's role in addressing these problems.

The first presentation was led by Bruce Lehman, presenting various methods of benchmarking the success of the South Africa's research system. Mr. Lehman pointed out that one of the most telling means of measuring success is to examine how the products of public research efforts contribute to GDP and national economic activity.

Immediately following Mr. Lehman's presentation, the first workgroup session allowed attendees to work in small groups to determine what measures could be used to determine the effectiveness of Southern Africa's research system.

The second and third presentations, as well as the second workgroup session, were held on the second day of the workshop. Presentation two was led by Professor Ryan who discussed the "sociology of innovation," a concept rooted in American research universities. This concept stresses informal know-how training, networking groups, inter-institutional cooperation, and managing university research as a business enterprise. Professor Ryan stressed the importance this concept has played in driving U.S. knowledge-based industry and how adoption of a similar culture could assist South African research universities.

The last presentation was led by William Lowe who emphasized the importance of approaching research like a business, and in doing so, each public research institution should develop a business plan that identifies core strengths and intellectual property policies. Further, each university should strive to put together a research business team to execute the business plan, drawing from university personnel and alumni skilled in intellectual property and finance.

The conference was attended by more than 80 people from across Southern Africa, with representation from university and technicon research and technology transfer offices, personnel from various national agencies and science councils, leaders in research oriented businesses and government policy makers, including Minister Ben Ngubane of the Department of Arts, Culture, Science and Technology.

Goals of the Workshop

There were a number of goals motivating the design of the workshop. First, the workshop was held as a means of attracting people to the launch of SARIMA and generating momentum within the organization. For SARIMA to become a successful organization, significant participation by current stakeholders in South Africa's research system would be necessary. To that end, news of the workshop was well distributed among relevant departments at universities, technicons and national science councils. Some transportation costs were provided to representatives of historically black universities and technicons and the workshop featured an address by the Minister of the Department of Arts, Culture, Science and Technology. A representative from the USPTO and three other prominent intellectual property experts from the United States led the workshop presentations.

Another goal of the workshop was to establish a shared understanding among stakeholders of the problems and obstacles in developing a highly effective research and innovation system in Southern Africa. The attendees perceived substantial systemic problems at different organizational levels within the research system. However, to ensure all participating stakeholders were informed of the problems impacting all levels of the research system, the workshop utilized participatory components that provided sharing of experiences and perceptions.

The foremost goal of the workshop was to develop a strategic plan for SARIMA, which would address the professional needs of its members, as well as some of the larger problems of the research system identified by attendees. The program for the workshop set out to solicit necessary input from attendees by utilizing participatory workgroups. Input from these highly interactive sessions has been reviewed and is the primary source informing the action plan for SARIMA. The raw data from these workgroup sessions is appended to the end of this report.

Action Plan

The task of addressing the obstacles limiting the effectiveness of the research and innovation system of Southern Africa is a daunting one. A number of systemic and chronic problems have hindered the contributions to society that the research system could potentially make.

Recognizing the need to take immediate and long-term action, those who have formed and joined SARIMA have elected to take a proactive role to improve the research system. This role is guided by SARIMA's broad objectives, as provided by the Association's mission statement:

Professional development of those involved in managing research, technology transfer and the creation of intellectual capital.

Promotion of best practices in the management and administration of research and the use of intellectual capital to create value for education, public benefit and economic development.

Advocacy of appropriate national and institutional policy in support of research and generation of intellectual capital.³

While these objectives may provide a general direction for SARIMA activities, an action plan is required to realize these goals. Such an action plan identifies specific goals to be achieved that work toward SARIMA's broad objectives. Further, an action plan provides a time frame for SARIMA to achieve the identified specific goals.

This action plan, admittedly ambitious in its work program, should serve as a guide for SARIMA activities over the course of its first five years of operation. This plan is organized around five general categories of activities, referred to as work program areas. SARIMA should strive to achieve all the goals laid out within each work program, since all activities included in this plan are inter-related and reinforce one another.

The work program areas are as follows:

- Instituting Incentives for Researchers and Tertiary Institutions;
- Funding Policies;
- Collaboration Efforts;
- Building Human Capital;
- Research System Assessment.

³ Southern Africa Research and Innovation Management Association, v. 4, 2002.

Instituting Incentives for Researchers and Tertiary Institutions

One of the chronic problems faced by South Africa, and indeed by many developing countries, is that the products of sophisticated domestic research never reach the communities they are intended to assist. Though publicly supported and intended to directly serve public interests, research conducted at public research institutions often lack the means of effective application and distribution. This phenomenon however, has not always been limited to developing countries; at one point, the United States had similar disappointing experiences with the products of its public research institutions. In 1980 however, the United States introduced into law what has come to be known as the Bayh-Dole Act.⁴

The Bayh-Dole Act instituted economic incentives in the performance of public research with commercial potential and encourages American public research institutions to commercialize the products of research. It was reasoned that though scientific research is and should be conducted with the public interest in mind, the most efficient and effective way of sharing the benefits derived from research is through market mechanisms.⁵ As a result of the Bayh-Dole Act, American public research institutions have led the country's technological development and have contributed significantly to the United States economy through knowledge based wealth creation and the stimulation of new companies and industries.⁶ Further, the Bayh-Dole Act has resulted in the widest possible distribution of the products of public research. Introduction of a mechanism similar to the Bayh-Dole Act in South Africa as well as other economic incentives for the commercialization of the products of public research will go a long way to ensure the public research does indeed benefit the country.

Instituting economic incentives for the performance of research may help address another key problem: the decreasing numbers of researchers in South Africa. The inadequate levels of compensation for researchers have led to an alarmingly small number of researchers at public research institutions. For instance, because remuneration in South Africa for experienced researchers is much below the international average, South Africa has experienced a "brain drain," losing some of the most productive researchers to research institutions and businesses abroad.⁷ Demographic information has also demonstrated that there are fewer and fewer younger people joining the ranks of researchers, presumably at least partially because other fields are more lucrative.⁸ By providing economic incentives to researchers not directly related to normal compensation, more people will be encouraged to enter the scientific research field.

The main objective of the work program set out below is the introduction of a legislative measure in South Africa similar to the Bayh-Dole Act. However, to achieve this goal, it is acknowledged that significant effort will be required in changing the perceptions of stakeholders concerning economic incentives in the research process. There are opponents who strongly oppose introducing economic incentives into the research process. Some of these opponents feel that private benefit should not be attained through the commercial exploitation of products when public monies are contributed to the development of such a product. Additionally, there is

⁴ See, Council on Governmental Relations (COGR), The Bayh-Dole Act: A Guide to the Law and Implementing Regulations, September 1999 <<http://www.cogr.edu/bayh-dole.htm>>.

⁵ Id.

⁶ See *generally*, Association of University Technology Managers ("AUTM"), AUTM Licensing Survey FY 1999 Survey Summary.

⁷ Department of Arts, Culture, Science and Technology, "A National Biotechnology Strategy For South Africa," June 2001, at 24.

⁸ See, Johann Mouton, Benchmarking Research Performance at South African Higher Education Institutions, Center for Interdisciplinary Studies Report, 2000.

strong sentiment that economic incentives have no place in research and that all research should be conducted for the sake of science and human progress. Therefore, the work program also includes various advocacy activities directed at winning broad public support for providing economic incentives in the research process and changing the mindset of people opposed to such a policy.

Work Program - Instituting Incentives for Researchers and Tertiary Institutions

Activity	Notes
Year One	
Research and Analysis	<ul style="list-style-type: none"> • Review provisions of Bayh-Dole Act (“Incentive Legislation”) and its impact on U.S. public research institutions and economy. • Evaluate Incentive Legislation measures, for application in South Africa. • Investigate additional types of incentives available.
Drafting and Information Dissemination	<ul style="list-style-type: none"> • Draft document compiling research and analysis of Bayh-Dole Act, and feasibility of applying similar incentive legislation (target audience: research managers, researchers). • Draft Document outlining any additional types of incentives developed (general audience).
Drafting	<ul style="list-style-type: none"> • A report outlining and supporting appropriate version of Incentive Legislation for South Africa. Integrate any additional incentives developed into Incentive Legislation (target audience: government ministers, key government department personnel, interested members of parliament, university vice-chancellors). • Solicit feedback from SARIMA membership.
Policy Advocacy	<ul style="list-style-type: none"> • Hold workshops presenting SARIMA’s research and analysis (Report above) for key groups in order to secure strategic partners to support SARIMA’s idea of appropriate Incentive Legislation (target audience: government ministers, key government department personnel, interested members of parliament, university vice-chancellors).
Year Two	
Drafting and Information Dissemination	<ul style="list-style-type: none"> • Write press releases, newspaper articles and other advocacy pieces to support SARIMA’s policy on Incentive Legislation (target audience: media, public)
Policy Advocacy	<ul style="list-style-type: none"> • Hold additional workshops presenting SARIMA’s research and analysis in order to secure strategic partners within government to support SARIMA’s idea of appropriate Incentive Legislation (target audience: government department ministers, key government department personnel, interested members of parliament, university vice-chancellors).
Drafting	<ul style="list-style-type: none"> • Working in conjunction with strategic partners within government, draft the text of legislation to be proposed.
Implementation	<ul style="list-style-type: none"> • Conduct activities necessary to support implementation of Incentive Legislation into law.
Year Three – Five	
Monitoring	<ul style="list-style-type: none"> • Effectiveness of Incentive Legislation in achieving its objectives.
Drafting and Information Dissemination	<ul style="list-style-type: none"> • Draft and disseminate press releases and articles that communicate benefits derived from Incentive Legislation (target audience: all stakeholder, public; policymakers in neighboring countries)

Funding Policies

A key aspect to the development of a first-rate public research system is adequate funding. Borrowing from the American experience, substantial federal research funding has been a major catalyst in producing benefits derived from public research institutions, including the introduction of new products, the creation of new jobs and stimulation to the economy in excess of funding provided by the federal government.⁹ The funding of research in the United States is much more than simply another government expenditure; it has long been seen as a fundamental national investment.¹⁰

As mentioned above, South Africa's research system has experienced problems finding and retaining research personnel. This problem is endemic of inadequate funding for research. Indeed, many problems have begun to emerge as a result of inadequate funding.¹¹ Therefore, a key part of SARIMA's work program will consist of influencing the funding policies affecting research conducted at public research institutions.

SARIMA should concentrate on three objectives related to funding. First, SARIMA should lobby for an increase in direct government support of research activities. However, given the numerous demands facing the national budget, budgetary constraints may preclude a substantial increase of government funding in the near term. As such, SARIMA should also work to secure a role in advising government agencies responsible for research funding policies and practices. For instance, SARIMA could work with government agencies in changing the way funding grants are awarded, by ensuring that such decisions are tied to certain factors like proven research capacity and whether there is a commercialization aspect to the overall strategy of approved proposals. Lastly, SARIMA should work with the government in establishing a business environment that encourages venture capital in research endeavors. One way this can be achieved is through tax incentives related to investing in spin-off companies based around research conducted at public research institutions.

⁹ COGR, *supra* note 4.

¹⁰ *Id.*

¹¹ These funding related problems include understaffed technology transfer offices and a lack of funding for international patents. See, IPI-USAID Report 1, *supra* note 2.

Work Program – Funding Policies

Activity	Notes
Year One	
Research and Analysis	<ul style="list-style-type: none"> • Survey current government agency practices and legislative requirements that place undue requirements on funding.
Drafting and Information Dissemination	<ul style="list-style-type: none"> • Compile a report outlining alternative funding policies and practices that improve upon the current policies and practices. (target audience: government department ministers, key government department personnel, university vice-chancellors).
Policy Advocacy	<ul style="list-style-type: none"> • Hold workshops presenting SARIMA's research and analysis (Report above) for key groups in order to secure strategic partners to support SARIMA's idea of better funding policies and practices (target audience: government department ministers, key government department personnel, interested members of parliament, university vice-chancellors).
Implementation	<ul style="list-style-type: none"> • Conduct activities necessary to support implementation of policies and legislation directed towards SARIMA's funding objectives.
Year Two	
Research and Analysis	<ul style="list-style-type: none"> • Study the relationship between research funding and benefits to society derived from research; • Research total government expenditure on research and compare with international data on investment in research
Drafting and Information Dissemination	<ul style="list-style-type: none"> • Compile a report justifying additional government expenditures on research. (target audience: government department ministers, interested members of parliament, media).
Policy Advocacy	<ul style="list-style-type: none"> • Hold workshops presenting SARIMA's research and analysis (Report above) for key groups in order to secure strategic partners to support SARIMA's efforts to increase government expenditure on research (target audience: government department ministers, key government department personnel, interested members of parliament, university vice-chancellors).
Implementation	<ul style="list-style-type: none"> • Conduct activities necessary to support implementation of policies and legislation directed towards SARIMA's funding objectives.
Continue Buy-in Efforts	<ul style="list-style-type: none"> • Continue information dissemination and policy advocacy activities to win acceptance for funding policies and practices not already adopted.
Monitoring	<ul style="list-style-type: none"> • Effectiveness of changes in funding policies and practices

Year Three	
Research and Analysis	<ul style="list-style-type: none"> • Investigate means of attracting private investment and venture capital through changes in the business and tax laws.
Drafting and Information dissemination	<ul style="list-style-type: none"> • Compile a report discussing ways to create a business environment conducive to private investment in research efforts. (target audience: government department ministers, key government department personnel, interested members of parliament). • Write press releases, newspaper articles and other advocacy pieces to support SARIMA's policy on Incentive Legislation (target audience: media, public)
Policy presentations	<ul style="list-style-type: none"> • Hold workshops presenting SARIMA's research and analysis (Report above) for key groups in order to secure strategic partners to support SARIMA's efforts to provide a better business environment for private investment in research (target audience: government department ministers, key government department personnel, interested members of parliament).
Implementation	<ul style="list-style-type: none"> • Conduct activities necessary to support implementation of policies and legislation directed towards SARIMA's funding objectives.
Monitoring	<ul style="list-style-type: none"> • Effectiveness of SARIMA policy objectives adopted.
Continue Buy-in Efforts	<ul style="list-style-type: none"> • Continue information dissemination and policy advocacy activities to win acceptance for SARIMA policy objectives not already realized (general)
Year Four – Five	
Monitoring	<ul style="list-style-type: none"> • Effectiveness of SARIMA policy objectives adopted.
Continue Buy-in Efforts	<ul style="list-style-type: none"> • Continue information dissemination and policy advocacy activities to win acceptance for SARIMA policy objectives not already realized (general)

Collaboration Efforts

While improving funding levels and criteria address one aspect of the lack of adequate funding for research, another means of addressing the same problem is by improving efficiency of the research work already being conducted in public research institutions. SARIMA can work to accomplish this by organizing research and related efforts between public research institutions, particularly between tertiary institutions.

During the workshop, attendees communicated that there is much competition between tertiary institutions (based on funding, etc.). As such, there is little sharing of information and other collaborative work between these institutions. Many attendees believe that SARIMA should intervene in this situation, since there are many potential benefits for these institutions to work together. For instance, they could share results and costs of research in areas of research where more than one institution is currently engaged. Further, assuming the development of commercial products from such research, these institutions can also share the costs and remuneration of commercializing the product.

Besides sharing the fruits of research, collaboration can also assist in facilitating the technology transfer process. Many universities and technicons currently have few technology transfer resources. However, it was suggested by workshop attendees that by working with a university that does possess sophisticated personnel trained in technology transfer, commercialization of research products will not be hindered for those tertiary institutions disadvantaged by lack of their own technology transfer offices.

Collaboration between tertiary institutions will also work toward addressing the differences in research capacity between Historically Black Universities (HBUs) and Historically White Universities (HWUs). Sharing of resources and expertise between HBUs and HWUs potentially can do much to raise the level of research capacity in HBUs.

Another area SARIMA could work to improve is collaboration between public research institutions and industry. Though indirect efforts at this objective are taken in the form of incentivizing research and providing a better a business environment for private investment, SARIMA can take the lead in providing more direct means of collaboration by offering networking sessions between business leaders and researchers.

Work Program – Collaboration Efforts

Activity	Notes
Year One	
Networking	<ul style="list-style-type: none"> • Provide opportunities for researchers and research managers to come together and network, possibly by hosting conferences and asking researchers to present on select research topics.
Year Two	
Networking	<ul style="list-style-type: none"> • Continue to provide networking opportunities.
Research and Analysis	<ul style="list-style-type: none"> • Investigate the feasibility of sharing technology transfer offices between public research institutions.
Drafting and Information Dissemination	<ul style="list-style-type: none"> • Draft a report demonstrating ways technology transfer offices can collaborate. (target audience: university vice-chancellors, researchers, media).
Policy Advocacy	<ul style="list-style-type: none"> • Hold workshops presenting SARIMA's research and analysis (Report above) for key groups in order to secure strategic partners to support SARIMA's efforts to institution collaboration between public research institutions through shared technology transfer offices (target audience: university vice-chancellors, researchers, media).
Implementation	<ul style="list-style-type: none"> • Conduct activities necessary to support implementation of policies and legislation directed towards SARIMA's funding objectives.
Year Three – Five	
Monitoring	<ul style="list-style-type: none"> • Effectiveness of shared technology transfer offices.

Building Human Capital

One of the most widely recognized problems among workshop attendees is the lack of intellectual asset management skills, particularly as related to technology transfer and commercialization. A number of specific shortcomings were identified by attendees, including lack of ability to identify early intellectual property rights in research, inability to optimize research resources and limited knowledge of the alternative licensing schemes available. Many believed that addressing these problems should be the main purpose of the Association.

To address the lack of necessary skills in technology transfer and intellectual asset management in South Africa, SARIMA should provide training opportunities (workshops, study tour programs) focusing on the following skills:

- Business management of intellectual property;
- Proposal writing and business plan development;
- Preparing terms of contract research
- Project management techniques;
- Locating the market for commercialized research;
- Fund-raising techniques for grants (private/public/government) and venture capital;
- Legal Training – Intellectual property and contractual;
- Research management – Good lab practices, documentation, critical appraisal.

Further, since there are no universally-recognized policies or standards in South African research institutions concerning technology transfer practices and procedures, many believe SARIMA could take the lead in establishing a uniform national policy on these matters through certification of training and technology transfer personnel.

Work Program – Building Human Capital

Activity	Notes
Year One – Five	
Workshops	<ul style="list-style-type: none">• Provide workshops to SARIMA members designed to build their technology transfer and asset management skills.
Study Tours	<ul style="list-style-type: none">• Provide study tour opportunities where SARIMA members can visit technology transfer offices of foreign universities to comparatively study the technology transfer process and asset management.

Research System Assessment

As mentioned in the Workshop Summary, the workshop program specifically included a participatory session built around assessing the effectiveness of Southern Africa's research system. The intention behind this design was two fold. First, it was intended to demonstrate to the attendees the importance of benchmarking and assessment of the research system (see below). Second, the session was intended to solicit input from the attendees on how to gauge the effectiveness of the research system.

The work-group session proved successful in demonstrating to attendees why IPI and SARIMA assigned a high importance to the issue and placed near the beginning of the program. Even more success was achieved in soliciting input from the attendees in developing means of measuring the effectiveness of the system (see Appendix One).

There are three main goals for SARIMA arising from research system assessment. The first goal is to gauge the effectiveness of the research system. However, this goal in turn has its own vital purpose for SARIMA. In order to support all the other activities SARIMA will engage in, it is necessary to provide concrete data on the effectiveness of the research system, especially on weaknesses of the system. By doing so, and tailoring SARIMA activities to address those weaknesses, SARIMA will be able to better justify its work programs.

Directly related to the first goal, the second goal of SARIMA is to conduct research system assessment – now and in the future – in order to demonstrate the affect SARIMA activities have on the system. It is of course presumed that successful completion of the work plans in this document will lead to a much improved research system. Assessment of system will be able to confirm this.

Lastly, research system assessment can help document the benefits of the research system to society by measuring such things as economic activity spurred by research (in the form of license agreements and spin-off companies). The benefits of research are not clearly understood by most people; a fact which has led policy makers to neglect the many problems and ignore the great potential of the research system. Information compiled from research system assessment can be used to show the link between research and various public benefits, and hopefully then be used to convince stakeholders of the value of SARIMA's activities.

Work Program - Research System Assessment

Activity	Notes
Year One	
Research and Analysis	<ul style="list-style-type: none"> • Study means of measuring the effectiveness of national research systems, but reviewing literature on research system assessment and models of research system assessment surveys (i.e. AUTM survey).
Drafting and Information Dissemination	<ul style="list-style-type: none"> • Design appropriate survey to assess the effectiveness of the research system, for distribute among public research institutions. • Inform stakeholders of the purpose and importance of the survey (research managers, researcher, university vice-chancellors).
Implementation	<ul style="list-style-type: none"> • Conduct the survey
Analysis and Review	<ul style="list-style-type: none"> • Analyze and prepare a report on the data collected from the survey. • Make any changes appropriate to the survey.
Year Two – Five	
Repeat Implementation, Analysis and Review	See Above.

Appendix One

Research System Assessment Criteria

The criteria set out below were developed by workshop attendees to be used to benchmark the effectiveness of Southern Africa's research system. These measures of research effectiveness are intended to be prospective in nature, and should provide a good measure of the current status of the research system and the status of the system in the future

Measures related to research

- The quality of research;
- The direction and focus of research;
- The intended product of research;

Measures related to research funding

- Funding from international sources
- Funding from non-government sources

Measures related to researchers

- The total number of researchers participating in the research system;
- The total number of post-graduate researchers participating in the system;
- The total number of academics who are researchers participating in the system;
- The incentives (monetary & non-monetary) available to the average researcher;
- The total number of students graduating with science and technology degrees;
- The total number of technology transfer offices at public research institutions;
- The total number of staff in technology transfer offices.

Measures related to traditional products of research

- The total number of patents received on products of the research system;
- The total number of license agreements for products of the research system;
- The total number of peer reviewed articles published by researchers in the system;
- The total number of books written by researchers in the system;
- The total number of conference papers written/presented by researchers in the system;
- The total monetary value received through royalties and licensing fees;

Measures of economic activity spurred by research

- The total number of spin-off companies based on products of the research system;
- The total number of jobs created through the commercialization of research;
- The effect products of research have on gross domestic product.

SARIMA Organizational Meeting

February 14 – 15, 2002

Benchmarking the Effectiveness of South Africa's Research and Innovation System

Raw Data from Workshop Group Discussions

Purpose:

In designing the workshop to accompany SARIMA's organizational meeting, it was felt that it was critical to identify means by which to evaluate and measure South Africa's research and innovation system. This initial work will serve as the basis for a more complete investigation of South Africa's research and innovation system as a part of the follow-up work IIPi will engage in with SARIMA.

Group led by Rosemary Wolson

1. Investigate the quality of researchers and factors that effect the quality of researchers;
 - Enabling environment
 - Incentives
 - Sustainability

NOTE: Its important to keep in mind the demographics of people who are researchers (e.g. race, age, gender, etc.) and how to change these demographics.
2. Measuring the impact of the research and innovation system;
 - On public policy
 - On the national economy
 - Overall social impact (direct & indirect)
3. Simple gauges of effectiveness;
 - No patents, licenses, products, companies that "improve quality of life" (incl. Health)
 - Publications – NOTE: this may be a better way of doing gauging effectiveness
4. Communication of research and innovation effectiveness should cover;
 - Level of impact
 - Popular publications and the press
5. Cost-Effectiveness.

Group Led by **Ian Burns**

Measurement and Benchmarking

NOTE: “Horses for courses” – including across whole process

1. Well-understood “obvious” measures of research and innovation system effectiveness;
 - Jobs
 - number
 - value
 - Funding:
 - International (Grant & Commercial)
 - National (Grant & Commercial)
 - GDP Related
 - Patents
 - cost implications
 - SAPTO Deficiencies
 - Research Output
 - Publications
 - Post Graduates
 - Research Capacity
2. Less understood “less obvious” measures of research and innovation system effectiveness;
 - IKS
 - Knowledge belongs to community not individuals
 - added value inside RSA
 - Alignment with national policy
 - Research benefits reaching communities and stakeholders
 - Human capital development
 - Quality of life measures
 - Social consequences

Group Led by **Gerrie Mostert**

1. Current criteria gauging the effectiveness of the research and innovation system;
 - Publications – amount and impact factor
 - Number of PhD/Masters students
 - Level of external funding
 - Conferences and conference papers
 - Patents
2. Area's impacted by effectiveness of the system;
 - Profession
 - Knowledge Base
 - Funding
3. Methods of allocating current funding may have an impact on effectiveness;
4. Research planning may have an impact on effectiveness;

5. National research agenda
 - Sectoral needs
 - Foresight exercise
 - Obtain buy-in
 - International Precedent

Group led by **Thorsten Henschel**

Tangibles	Non-tangibles
1. Do we actually have knowledge to commercialize?	Government Policy
2. Lack of funding for international patents	
3. Costs of Protecting IP/Patents once registered	
4. Do we know how to generate knowledge <ul style="list-style-type: none"> • Quality of research • Focus of research <p>(Should the government direct research?) Presidential Imperatives or no?</p> <p>=</p>	
5. Does government stimulate research that is commercially viable? Or does it improve quality of life?	
6. Does research improve the quality of life? <ul style="list-style-type: none"> • Measurable goals • Improving GDP • Societal benefits • Biodiversity conservation 	
7. Balance community viability with national imperatives;	
8. Success rate of proposal applications;	
8a. Number of researchers;	
9. Does government incentivize research? (by funding “patent” registration & commercialization as opposed to publication);	
10. The proportion of research that fits national focused imperatives (i.e. is government funding its focused national imperatives effectively)	Commercial/Non-commercial dichotomy
11. How successful are we at identifying commercial	- Holistic view of government/research

	research potential	knowledge transfer - Proportion of research projects into product
12.	Research transfer to SME's	
13.	Is there enough entrepreneurial training? <ul style="list-style-type: none"> • Portion of graduates commercially active <ul style="list-style-type: none"> - employable - started own business - Are we changing the mindsets of post graduate students - Proportion of incubators 	
14.	Research creativity – courses to stimulate	
15.	Is there enough collaboration between institutions, government and industry?	

Group led by **Tony Bunn**

Overall Goal: Development of a vibrant research culture catering to regional, national and global agendas, which leads to the improved quality of life in South Africa.

1. Benchmarks
 - Number of post-graduates and active researchers
 - Throughput rate of students
 - Research funding
 - Institutional collaborations with government, industry and other research institutions
2. Research effectiveness measures
 - Number of publications and quality
 - Number of USA/EU/Japanese patents
 - Number of research projects applied in communities
 - Financial benefits generated (Jobs, joint ventures, new companies, licenses)
 - Number of tech transfer offices
 - Exports and competitiveness
 - Attraction of national and international investment and funding into research

Group led by **Di McCann**

Strategic points directed at measuring the effectiveness of the research and innovation system;

- Identify South Africa's Competitive Advantage & Specific problems e.g. HIV/AIDS;
 - Use of directed research to address these concerns

- Outcomes of research should meet regional and national objectives;
 - Adding value to natural/intellectual resources
- Measure of funding to natural/intellectual resources;
- Surveying knowledge of existing expertise and needed expertise;
- Brain drain – how to keep contact/attract back;
- Measure of collaboration with university liaison offices;
- Funds brought in for research (directed/blue skies/external/solutions based);
- Number and caliber of post-graduates;
- Research of strategic importance; national priorities – research outputs;
- Use of appropriate technologies;
- Contribution to poverty alleviation;
- Research impact on national employment;
- Lifelong learning/appropriate educational opportunities;
- Knowledge transfer to policy direction/inputs to government policy;
- Knowledge/Technology transfer to research institutions' constituencies;
- SAPSE;
- Effectiveness/distortions;
- Reward systems for research outputs;
- Weighted toward directed research.

Group led by **Marilet Sienaert**

1. How to evaluate effectiveness;
 - Rate of commercialization
 - Quality of research
 - Direction of research
2. Factors;
 - National policy
 - Funding
 - Cooperation
 - Incentives
 - Skills
3. The "What" of Benchmarking;
 - Number of research students
 - Number of publications, etc. (patents).
 - Number of industry funded projects (and amounts brought into the system).
 - Number of rated scientists (quality)
 - Degree of commercialization/economic value (Set)
 - Number of NGO linkages (Humanities/Social Sciences)
 - Impact of research as measured by stakeholders
 - Number and quality of collaborative projects

4. SARIMA's Role;
 - Developing uniform policies on benchmarking based on institutional experience (bottom-up)(ensure support for "blue sky" or curiosity driven research)
 - Constitute forum from which to lobby and engage with government
 - One-stop-shop on funding opportunities
 - One-stop-shop for support information on commercialization
 - Provide training programmes for research managers on the above

Group led by **Thomas Auf der Heyde**

1. Social and Cultural Development Benchmarks;
 - Scholarly output (Number of books, articles, etc.)
 - Funds flowing into natural priority areas
 - Achievements in those areas
2. Industrial/Economic Development Benchmarks;
 - Income from non-government sources
 - Contribution to GDP
 - Number of jobs in spin-offs
 - Commercialization of Intellectual Property
 - License agreements
 - Royalties
 - Partnerships
3. Human Resource Development;
 - Number of graduates and area of their degrees
 - Number of academics being drawn into research

SARIMA Organizational Meeting

February 14 – 15, 2002

Defining SARIMA's Policy and Training Agenda

Raw Data from Workshop Group Discussions

Purpose:

The main purpose of this workshop was to develop a common perspective among existing technology transfer managers of tertiary institutions concerning the scope of activities SARIMA will engage in.

Group led by Rosemary Wolson

Policy areas SARIMA should focus on:

National Policy Goals

1. Form working groups;
2. Recruitment efforts: Invite participate in SARIMA through committees;
3. Clarify ownership of intellectual property from state-funded research;
4. Perform research and innovation assessment of South African tertiary institutions;
5. Engage with ongoing processes and existing organizations that overlap SARIMA goals;

(Tertiary) Institutional Policy Goals

1. Develop intellectual property policies for tertiary institutions;
2. Facilitate access to funds for tertiary institutions;
3. Changing institutional mindsets concerning commercialization of research;

Professional Training Agenda

1. Business management of intellectual property;
 2. Proposal writing and business plan development;
 3. Project management techniques;
 4. Locating the market for commercialized research;
 5. Locating and securing funding opportunities;
 6. Locating and securing licensing opportunities.
-

Group led by Rehema White

Regional, International, National policy level

1. Enabling legislation is required concerning copyrights and patents;
 - Establish a body to engage relevant policy makers
2. Perform research on the research system;
 - This research will provide needed data to government departments
 - The data can be used to lobby for funding
 - The data can be used to lobby to change policy

3. Government funding;
 - Affect decision making regarding university subsidies
 - Affect government research
4. Internet research directory;
 - Affect develop/developing countries/policies
5. Industry academia links;
 - Define mechanisms for commercialization
6. Research quality;
 - Input to monitoring processes
7. Teaching quality curriculum;
 - Affect quality or incoming researchers
 - Alter curricula focus areas e.g. teaching entrepreneurial skills
8. Develop institutional core competencies;
 - Discuss potential specializations
 - Collaboration potential
9. Research quality production;
 - Aging researchers
 - Gender imbalance
 - Racial make-up
 - Total national research output
10. Encourage SMMEs/Incubators;
 - Lobby for tax incentives
 - Support for venture capital
 - Incentives for researchers to develop
 - Legal support for patents
 - Support for e-commerce
11. Address the gap between HBUs and HWUs;
 - Collaborations/Mentoring/Resource Sharing/Funding Opportunities/Encourage research culture/output

Institutional Support Policy Goals

1. Researcher demographics;
 - Encourage minority researchers
 - Build research capacity
2. Training of research managers;
3. Incentives for researchers;
 - Motivate researchers
 - Incentives to commercialize
4. Research quality;
5. Direct appropriate research;
 - Influence research agenda as result of SARIMA discussions
 - Social benefits
 - Commercial opportunities
 - Research managers talk to local industry
 - Still permit creativity and basic research
6. Create enabling research environment;
 - Research to become part of strategic planning unit of the institution: SARIMA to lobby
 - Present a common voice/data to Vice Chancellors and finance registrars, etc.

- Discuss role of tenure vs. contract etc., of academic positions. Push to research vs. job security.
- 7. Obtain funding opportunities;
 - Through COS
 - Proposal writing
 - Study commissioned by SARIMA to look at how external funds can support post-doctorates, programmes, etc., e.g. US system.
- 8. Address brain drain – how? / Obtain benefits from sabbaticals;

Training

1. Fundraising for grants (private/public/government), venture capital, bursary funds;
2. Legal Training – Intellectual property and contractual;
3. Web publishing and e-commerce;
4. Business training/plans/office administration;
5. Personal management;
6. Time management;
7. Research management – Good lab practices, documentation, critical appraisal and manual;
 - Share expertise on policies for conferences and research centers, etc.
8. Knowledge management;
9. Ethics;
10. Cost pricing;
11. Motivating researchers – morale, incentives;
12. Access skills, levy funds as SARIMA.

Note: SARIMA should develop partnerships with organizations like, Department of Health, DTI, DACST, DOE, Department of Communications, DOE's National Research Foundation, the World Bank, UN, ACU, Donor agencies, European Sixth Framework

Group led by **Diana McCann/Cliff Studman**

Training for SARIMA Members

1. Accreditation of courses;
2. Courses to facilitate recognition as professional;
3. Details on specific funders;
4. Intellectual Property basics;
5. Research practice – proposal preparation/contracts;
6. Project management;
7. Utilization and dissemination of research opportunities/options;
8. How to get our message to staff/politicians.

Policy Advocacy

1. Intellectual property – need for national policies;
2. Needs of researchers;
3. Proactive (integrated) inputs on data request (seeking info ahead of time);
4. Researchers attitudes – mobility/frustration levels;
5. Creation of incentives.

Helps

1. Sample Contracts/Documents;
 2. Information exchange;
 3. Where to publish.
-

Group led by **Tony Bunn**

1. Create a task team
 - Can't train till we know needs and levels required.
 2. Gather the information
 - Survey/questionnaires/Interviews
 3. Process the information
 - Identify needs
 - Develop a training plan
 4. Set goals of policy (SARIMA, institutional, national)
 5. Do training
-

Group led by **Eric Garduño**

SARIMA's Goals/Agenda

1. Develop regional cooperation
 2. Develop collaboration in tech transfer functions and research departments
 3. Prompt university and technicians to collect data on research
 4. Establish and clarify relationships with other organizations
 5. Provide workshops on IP training and ways to incentivize research
 6. Develop IKS policy for members
 7. Address decreasing numbers of researchers
 8. Develop linkages between business and universities/technicians
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Group led by **Hilton Fransman**

Policy and Training

1. Importance of business plans preceded by consultation, needs' analyses, and planning.
 - Need for training with research managers

2. Importance of business plans regarding:

- Correct data
- Realism
- Relevance
- Objectivity
- Competitiveness
- Focus on of funder
- Convincing

3. Skills of Research Managers:

- Interpersonal
- Administrative
- Communication
- Management
- Leadership
- Writing (proposals)
- Networking
- IT Skills
- Team skills
- Entrepreneurial skills

Note: Training in above, plus awareness training

4. Fully fledged and staffed research offices that have people with a wide range of relevant skills

5. Questions

- What are the typical skills/people comprising research offices?
- Must all research managers follow a prescribed (common) programme of training?
- Will the institution make this training a requirement, with the view of accrediting research managers (professionalizing)?

Note: Maybe SARIMA can formalize this for us